

EXHIBIT 32

James A. Fogarty

March 2008

Computer Science & Engineering
University of Washington
Box 352350
Seattle, WA 98195-2350

Phone: +1 (206) 685-8081
Fax: +1 (206) 543-2969
E-Mail: jfogarty@cs.washington.edu
WWW: <http://www.cs.washington.edu/homes/jfogarty>

EDUCATION

Doctor of Philosophy, Human Computer Interaction, February 2006

Human Computer Interaction Institute, School of Computer Science

Carnegie Mellon University

Dissertation: *Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility*

Advised by Scott E. Hudson

Committee: Christopher Atkeson, Eric Horvitz, Robert Kraut

Bachelor of Science, Computer Science, May 2000

Virginia Polytechnic Institute & State University (Virginia Tech)

Degree in Honors, with Honors Thesis

Minors in Math and Political Science

Major QCA: 4.0/4.0

Overall QCA: 3.96/4.0

PROFESSIONAL EXPERIENCE

Assistant Professor, Computer Science & Engineering, University of Washington (Fall 2006 – present)

Visiting Researcher, Microsoft Research, Redmond, WA (Summer 2007)

Hosts: Mary Czerwinski and Desney Tan

Post-Doctoral Fellow, Carnegie Mellon University (Spring 2006 – Summer 2006)

Graduate Research Assistant, Carnegie Mellon University (Fall 2000 – Spring 2006)

Advisor: Scott E. Hudson

Research Intern, IBM TJ Watson Research Center, Hawthorne, NY (Summer 2003)

Host: Jennifer Lai Managers: John Richards and Paul Chou

Undergraduate Research Assistant, Virginia Tech (Fall 1998 – Spring 2000)

Advisors: John Carroll and Mary Beth Rosson

Developer, IBM Research Triangle Park, Raleigh-Durham, NC (Summer 2000)

Developer, Appropriate Technologies, Chesapeake, VA (Summer and Fall 1997, Summer 1998)

JOURNAL ARTICLES

[J.3] **Fogarty, J.**, Hudson, S.E., Atkeson, C.G., Avrahami, D., Forlizzi, J., Kiesler, S., Lee, J.C., and Yang, J. (2005). Predicting Human Interruptibility with Sensors. *ACM Transactions on Computer-Human Interaction* (TOCHI), Vol. 12, No. 1, March 2005, pp. 119-146.

[J.2] **Fogarty, J.**, Lai, J., and Christensen, J. (2004). Presence versus Availability: The Design and Evaluation of a Context-Aware Communication Client. *International Journal of Human-Computer Studies* (IJHCS), Vol. 61, No. 3, September 2004, pp. 299-317.

[J.1] Carroll, J.M., Rosson, M.B., Isenhour, P., Ganoe, C., Dunlap, D., **Fogarty, J.**, Schafer, W., and Van Metre, C. (2001). Designing Our Town: MOOsburg. *International Journal of Human-Computer Studies* (IJHCS), Vol. 54, No. 5, May 2001, pp. 725-751.

REFEREED CONFERENCE ARTICLES

-
- [C.20] Hao Lü and **Fogarty, J.** (2008). Cascaded Treemaps: Examining the Visibility and Stability of Structure in Treemaps. *Proceedings of Graphics Interface (GI 2008)*, To Appear.
- [C.19] **Fogarty, J.**, Tan, D., Kapoor, A., and Winder, S. (2008). CueFlik: Interactive Concept Learning in Image Search. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2008)*, To Appear. (Acceptance Rate: 22%)
- [C.18] Patel, K., **Fogarty, J.**, Landay, J.A., and Harrison, B. (2008). Examining Obstacles to the Non-Expert Application of Machine Learning. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2008)*, To Appear. (Acceptance Rate: 22%)
- [C.17] Toomim, M., Zhang, X., and **Fogarty, J.** (2008). Using Shared Knowledge Questions for Authentication and Access Control. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2008)*, To Appear. (Acceptance Rate: 18%)
- [C.16] Hoffmann, R., **Fogarty, J.**, and Weld, D.S. (2007). Assieme: Finding and Leveraging Implicit References in a Web Search Interface for Programmers. *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2007)*, pp. 13-22. (Acceptance Rate: 17%)
- [C.15] **Fogarty, J.** and Hudson, S.E. (2007). Toolkit Support for Developing and Deploying Sensor-Based Statistical Models of Human Situations. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2007)*, pp. 135-144. (Acceptance Rate: 24%)
- [C.14] Avrahami, D., **Fogarty, J.**, and Hudson, S.E. (2007). Biases in Human Estimation of Interruptibility: Effects and Implications for Practice. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2007)*, pp. 51-60. (Acceptance Rate: 24%)
- [C.13] Tullio, J., Dey, A.K., Chalecki, J., and **Fogarty, J.** (2007). How it Works: A Field Study of Non-Technical Users Interacting with an Intelligent System. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2007)*, pp. 31-40. (Acceptance Rate: 24%)
- [C.12] Andrew, A., Borriello, G., and **Fogarty, J.** (2007). Toward a Systematic Understanding of Suggestion Tactics in Persuasion Technologies. *Proceedings of the Conference on Persuasive Technology (Persuasive 2007)*. (Acceptance Rate: 44%)
- [C.11] **Fogarty, J.**, Au, C., and Hudson, S.E. (2006). Sensing from the Basement: A Feasibility Study of Unobtrusive and Low-Cost Home Activity Recognition. *Proceedings of the ACM Symposium on User Interface Software and Technology (UIST 2006)*, pp. 91-100. (Acceptance Rate: 22%)
- [C.10] Tang, K.P., Keyani, P., **Fogarty, J.**, and Hong, J.I. (2006). Putting People in their Place: An Anonymous and Privacy-Sensitive Approach to Collecting Sensed Data in Location-Based Applications. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2006)*, pp. 93-102. (Acceptance Rate: 23%)
- [C.9] **Fogarty, J.**, Baker, R.S., and Hudson, S.E. (2005). Case Studies in the use of ROC Curve Analysis for Sensor-Based Estimates in Human Computer Interaction. *Proceedings of Graphics Interface (GI 2005)*, pp. 129-136. (Acceptance Rate: 28%)
- [C.8] **Fogarty, J.**, Ko, A.J., Aung, H.H., Golden, E., Tang, K.P., and Hudson, S.E. (2005). Examining Task Engagement in Sensor-Based Statistical Models of Human Interruptibility. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2005)*, pp. 331-340. (Acceptance Rate: 25%)
- [Recipient of Best Paper Award]
- [C.7] **Fogarty, J.**, Hudson, S.E., and Lai, J. (2004). Examining the Robustness of Sensor-Based Statistical Models of Human Interruptibility. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI 2004)*, pp. 207-214. (Acceptance Rate: 16%)

- [C.6] **Fogarty, J.** and Hudson, S.E. (2003). GADGET: A Toolkit for Optimization-Based Approaches to Interface and Display Generation. *Proceedings of the ACM Symposium on User Interface Software and Technology* (UIST 2003), pp. 125-134. (Acceptance Rate: 21%)
[Invited to a "Best of UIST" session at SIGGRAPH 2004]
- [C.5] **Fogarty, J.**, Forlizzi, J., and Hudson, S.E. (2003). Portrait: Generating Personal Presentations. *Proceedings of Graphics Interface* (GI 2003), pp. 209-216. (Acceptance Rate: 33%)
- [C.4] Hudson, S.E., **Fogarty, J.**, Atkeson, C.G., Avrahami, D., Forlizzi, J., Kiesler, S., Lee, J.C., and Yang, Y. (2003). Predicting Human Interruptibility with Sensors: A Wizard of Oz Feasibility Study. *Proceedings of the ACM Conference on Human Factors in Computing Systems* (CHI 2003), pp. 257-264. (Acceptance Rate: 16%)
- [C.3] **Fogarty, J.**, Forlizzi, J., and Hudson, S.E. (2002). Specifying Behavior and Semantic Meaning in an Unmodified Layered Drawing Package. *Proceedings of the ACM Symposium on User Interface Software and Technology* (UIST 2002), pp. 61-70. (Acceptance Rate: 22%)
- [C.2] **Fogarty, J.**, Forlizzi, J., and Hudson, S.E. (2001). Aesthetic Information Collages: Generating Decorative Displays that Contain Information. *Proceedings of the ACM Symposium on User Interface Software and Technology* (UIST 2001), pp. 141-150. (Acceptance Rate: 19%)
- [C.1] **Fogarty, J.**, Dabbish, L., Steck, D., and Mostow, J. (2001). Mining a Database of Reading Mistakes: For What Should an Automated Reading Tutor LISTEN? In J.D. Moore, C.L. Redfield, and W.L. Johnson (Eds.), *Artificial Intelligence in Education: AI-ED in the Wired and Wireless Future* (AI-ED 2001), pp. 422-433. (Acceptance Rate: 45%)

REFEREED WORKSHOP PAPERS

- [W.8] Campbell, T. and **Fogarty, J.** (2007). Applying Game Design to Everyday Fitness Applications. Presented at *The ACM Conference on Human Factors in Computing Systems Workshop on Exertion Interfaces* (CHI 2007).
- [W.7] **Fogarty, J.**, Hong, J.I., Keyani, P., and Tang, K.P. (2006). Anonymous and Privacy-Sensitive Collection of Sensed Data in Location-Based Applications. Presented at *The ACM Conference on Human Factors in Computing Systems Workshop on Mobile Social Software* (CHI 2006).
- [W.6] **Fogarty, J.** (2004). Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility. Presented at *The ACM Symposium on User Interface Software and Technology Doctoral Symposium* (UIST 2004).
- [W.5] **Fogarty, J.** (2004). Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility. Presented at *The IBM Research Human Computer Interaction Symposium*.
- [W.4] **Fogarty, J.** (2004). Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility. Presented at *The International Conference on Ubiquitous Computing Doctoral Symposium* (UbiComp 2004).
- [W.3] **Fogarty, J.** (2004). Connecting versus Calming: Interruptibility, Presence, and Availability. Presented at *The ACM Conference on Human Factors in Computing Systems Workshop on Forecasting Presence and Availability* (CHI 2004).
- [W.2] **Fogarty, J.** (2004). AmIBusy: High-Level Abstraction in Ubiquitous Sensing Environments. Presented at *The International Conference Pervasive Computing Workshop on Toolkit Support for Interaction in the Physical World* (Pervasive 2004).
- [W.1] **Fogarty, J.** (2003). Sensor Redundancy and Certain Privacy Concerns. Presented at *The International Conference on Ubiquitous Computing Workshop on Privacy as Boundary Negotiation* (UbiComp 2003).

INVITED TALKS

-
- [I.9] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
University of Toronto, May 4, 2006
 - [I.8] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
Purdue University, Apr 12, 2006
 - [I.7] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
University of Wisconsin, Mar 23, 2006
 - [I.6] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
Intel Research, Seattle, Mar 20, 2006
 - [I.5] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
University of Washington, Mar 7, 2006
 - [I.4] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
University of California, Berkeley, Mar 2, 2006
 - [I.3] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
University of Illinois, Urbana-Champaign, Feb 21, 2006
 - [I.2] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
Palo Alto Research Center, Feb 16, 2006
 - [I.1] Constructing and Evaluating Sensor-Based Statistical Models of Human Interruptibility.
Microsoft Research, Feb 8, 2006

RELATED PRESS

-
- [P.3] Gibbs, W. (2005). Considerate Computing. *Scientific American*, Vol. 292, No. 1, Jan 2005, pp. 55-61.
 - [P.2] Celeste, B. (2003). A Phone That Knows You're Busy. *New Scientist*, Mar 15, 2003, p. 22.
 - [P.1] Smart Phones Will Know When You Can't Answer. *Reuters*, Mar 12, 2003.

GRANTS RECEIVED

-
- [G.2] Machine Learning Workstations for Ubiquitous Computing and Human Computer Interaction
Principal Investigator, Intel Higher Education Program, June 2007, \$12,237
 - [G.1] Integrating Sensor-Based Statistical Models of Human Situations into Everyday Applications
Principal Investigator, Intel Research, December 2006, \$30,000

TEACHING EXPERIENCE

-
- Data Structures (CSE 326), University of Washington** (Autumn 2007)
32 Students, with TA Peter Henry and Bo Qin
 - Advanced Topics in Human-Computer Interaction (CSE 510), University of Washington** (Spring 2007)
16 Students, with TA Saleema Amershi, 3.8/5.0 Course Evaluation (versus 3.5 departmental mean)
 - Human Interaction with Intelligent Systems (CSE 599), University of Washington** (Winter 2007)
15 Students, 4.1/5.0 Course Evaluation (versus 4.2 departmental mean)
 - HCI for Computer Scientists (15-291), Carnegie Mellon University** (Spring 2005)
Co-Instructor, taught with Darren Gergle and Fleming Seay
 - Programming Usable Interfaces (05-630), Carnegie Mellon University** (Spring 2003)
Teaching Assistant, course taught by Randy Pausch
 - Freshman Honors Seminar, Virginia Polytechnic Institute and State University** (Fall 1999)
Teaching Assistant, course taught by Jack Dudley

DOCTORAL STUDENTS SUPERVISED

Saleema Amershi (Winter 2007 – Present)
Supervising Saleema's work on human-in-the-loop machine learning.

Adrienne Andrew, *Co-Advised with Gaetano Borriello* (Summer 2007 – Present)
Supervising Adrienne's work on intelligent context-aware suggestions on mobile devices [C.12].

Kayur Patel, *Co-Advised with James Landay* (Winter 2007 – Present)
Supervising Kayur's work on tools to better support the application of machine learning algorithms and techniques as tools for software development.

OTHER STUDENTS SUPERVISED

Amanda Ahn, *Undergraduate Research Assistant* (Summer 2007)
Supervised Amanda's work with Kayur Patel interviewing expert developers of inference-based applications.

Taj Campbell, *Undergraduate Honors Thesis*, now at Google (Autumn 2006 – Spring 2007)
Supervised Taj's thesis, entitled "Exploring the design space of games in everyday fitness" [W.8].

Brian Ngo, *Undergraduate Independent Study* (Spring 2007)
Supervised Brian's work with Taj Campbell on developing a game to motivate everyday fitness [W.8].

Carolyn Au, *Undergraduate Independent Study*, with Scott E. Hudson, now at Google (Spring 2005)
Supervised Carolyn's exploratory work on the Mica2 Berkeley Mote platform, examining potential audio features to find several appropriate for our unobtrusive and low-cost home activity recognition [C.11].

Ben Davies, Rick Ebert, Rucha Humnabadkar, Becky Kaplan, (Spring 2001 – Spring 2003)
Matt Mowczko, and Long Pan, *Part-Time Employees*, with Scott E. Hudson.
Supervised the video-based simulation of sensors from recordings in office environments [J.3], [C.4].

STUDENT COMMITTEES

Meredith Skeels , Biomedical Informatics	<i>Ph.D. Supervisory Committee</i> (Spring 2007 – Present)
Keith Grochow , Computer Science & Engineering	<i>Ph.D. Supervisory Committee</i> (Summer 2007 – Present)
Yaw Anokwa , Computer Science & Engineering	<i>Quals Committee</i> (Spring 2007)

PROFESSIONAL SERVICE*Conference Committees***Program Committee member**

UIST 2008: ACM Symposium on User Interface Software and Technology

Program Committee member

GI 2008: Graphics Interface

Program Committee member

CHI 2008: ACM Conference on Human Factors in Computing Systems

Program Committee member

AmI 2007: European Conference on Ambient Intelligence

Program Committee member

UbiComp 2007: International Conference on Ubiquitous Computing

Program Committee member

GI 2007: Graphics Interface

Program Committee member

UIST 2006: ACM Symposium on User Interface Software and Technology

Program Committee member

GI 2006: Graphics Interface

Poster Program Committee member

UIST 2005: ACM Symposium on User Interface Software and Technology

Workshop Program Committee member

UbiComp 2005: International Conference on Ubiquitous Computing

Student Volunteer Co-Chair (with Joe Tullio)

UIST 2004: ACM Symposium on User Interface Software and Technology

Reviewer of Conference & Journal Publications

IJHCS: International Journal of Human-Computer Studies	(2005)
TOCHI: ACM Transactions on Computer-Human Interaction	(2003)
CHI: ACM Conference on Human Factors in Computing Systems	(2003-2008)
CSCW: ACM Conference on Computer Supported Cooperative Work	(2004, 2006)
Eurographics: Conference of the European Association for Computer Graphics	(2005)
GI: Graphics Interface	(2005-2008)
HCI: Human-Computer Interaction	(2006)
ICMI: ACM International Conference on Multimodal Interfaces	(2007)
Intelligent Systems: IEEE Intelligent Systems	(2007)
ISWC: IEEE International Symposium on Wearable Computers	(2004, 2007)
Pervasive: International Conference on Pervasive Computing	(2006-2007)
Pervasive Computing: IEEE Pervasive Computing	(2006, 2008)
SIGGRAPH: ACM Conference on Computer Graphics and Interactive Techniques	(2007)
UbiComp: International Conference on Ubiquitous Computing	(2005-2007)
UIST: ACM Symposium on User Interface Software and Technology	(2003-2007)
UMUAI: User Modeling and User-Adapted Interaction	(2006)

EXHIBIT 33

James A. Fogarty**INVOICE**INVOICE #001
DATE: APRIL 13, 2008**TO:**Melissa Baily
Quinn Emanuel Urquhart Oliver & Hedges, LLP
50 California Street, 22nd Floor
San Francisco, CA 94111
Direct: (415) 875-6336
Main Phone: (415) 875-6600
Main Fax: (415) 875-6700**FOR:**

Eon-Net v. Flagstar

DESCRIPTION	AMOUNT																														
Prior Art Search (56.2 Hours @ \$360/hour)	\$20,232																														
<table> <tr> <th>Day</th><th>Hours</th></tr> <tr><td>March 18</td><td>.5</td></tr> <tr><td>March 19</td><td>1.0</td></tr> <tr><td>March 20</td><td>3.5</td></tr> <tr><td>March 22</td><td>2.1</td></tr> <tr><td>March 24</td><td>8.5</td></tr> <tr><td>March 25</td><td>4.3</td></tr> <tr><td>March 26</td><td>8.1</td></tr> <tr><td>March 27</td><td>8.6</td></tr> <tr><td>March 28</td><td>7.2</td></tr> <tr><td>March 29</td><td>1.7</td></tr> <tr><td>March 30</td><td>2.4</td></tr> <tr><td>March 31</td><td>6.0</td></tr> <tr><td>April 1</td><td>1.0</td></tr> <tr><td>April 2</td><td>1.3</td></tr> </table>	Day	Hours	March 18	.5	March 19	1.0	March 20	3.5	March 22	2.1	March 24	8.5	March 25	4.3	March 26	8.1	March 27	8.6	March 28	7.2	March 29	1.7	March 30	2.4	March 31	6.0	April 1	1.0	April 2	1.3	
Day	Hours																														
March 18	.5																														
March 19	1.0																														
March 20	3.5																														
March 22	2.1																														
March 24	8.5																														
March 25	4.3																														
March 26	8.1																														
March 27	8.6																														
March 28	7.2																														
March 29	1.7																														
March 30	2.4																														
March 31	6.0																														
April 1	1.0																														
April 2	1.3																														
Document Purchase (Low 1990) from http://www.astm.org on March 24	\$25																														
TOTAL	\$20,257																														

EXHIBIT 34

James A. Fogarty**INVOICE**INVOICE #002
DATE: JUNE 22, 2008**TO:**Melissa Baily
Quinn Emanuel Urquhart Oliver & Hedges, LLP
50 California Street, 22nd Floor
San Francisco, CA 94111
Direct: (415) 875-6336
Main Phone: (415) 875-6600
Main Fax: (415) 875-6700**FOR:**

Eon-Net v. Flagstar

DESCRIPTION		AMOUNT
Analysis of Eon-Net Preliminary Infringement Claims (33.9 Hours @ \$360/hour)		\$12,204
Day	Hours	
May 5	.1	
May 20	.7	
May 26	.9	
May 27	.9	
June 3	.2	
June 6	.8	
June 9	2.5	
June 10	7.8	
June 11	4.8	
June 12	4.5	
June 16	.5	
June 17	2.3	
June 18	3.4	
June 19	4.4	
June 22	.1	
TOTAL		\$12,204

EXHIBIT 35

September 1, 2009

Ken Zeger

- Professor and consultant -

Personal Data

Address: 8272 Regents Rd. Suite #202, San Diego, CA 92122-1382
Phone: 858-442-5679 (cell)
Email: zeger@ucsd.edu
Web: <http://KenZeger.com>
Citizenship: USA

Academic Degrees

Ph.D (ECE): University of California, Santa Barbara (1990)
M.A. (Mathematics): University of California, Santa Barbara (1989)
S.M. (EECS): Massachusetts Institute of Technology (1984)
S.B. (EECS): Massachusetts Institute of Technology (1984)

Faculty Positions

University of California, San Diego	- Professor of Electrical Engineering (1998-present) - Associate Professor of Electrical Engineering (1996-1998)
University of Illinois, Urbana-Champaign	- Associate Professor of Electrical Engineering (1995-1996) - Assistant Professor of Electrical Engineering (1992-1995)
University of Hawaii	- Assistant Professor of Electrical Engineering (1990-1992)

Honors and Awards

- IEEE Fellow (2000)
- NSF Presidential Young Investigator Award (1991)
- United States Mathematical Olympiad (1980)

September 1, 2009

Consulting Experience

Clients:

- Answers, Inc.
- Automatic Data Processing Co.
- Hewlett-Packard Laboratories
- Institute for Defense Analyses
- Mathematics Consulting, Inc.
- MITRE Co.
- Nokia Telecommunications Inc.
- Prominent Communications Inc. (Chair of Technical Advisory Board)
- ViaSat Inc.
- Xerox Co. Palo Alto Research Center
- Zeger-Abrams Inc.
- Expert Witness in numerous patent infringement litigations.

Topics:

- Speech coding and recognition, audio coding, telephony.
- Image, fax, video, vision, television coding.
- Electronic hardware devices: cell phones, printers, cameras, TV, computers, dongles, etc.
- Protocols, networks, Internet, security, GPS.
- Digital and wireless communications.
- Error correcting codes.
- Communication protocols.
- Software: C, C++, BASIC, Fortran, Cobol, Algol, Pascal, Assembler, TMS320, Java, DSP, Verilog, HTML, JavaScript Perl, Visual Basic, VHDL.
- Department of Defense topics.

September 1, 2009

Research Interests

Source/Channel Coding, Image/Speech Compression, Networking, Statistical Learning and Pattern Matching, Information Theory, Graph and Complexity Theory, Combinatorial Monoid & Group Theory

Professional Activities

- Board of Governors of IEEE Information Theory Society (1998-2000, 2005-2007, and 2008-2010)
- Associate Editor At-Large of *IEEE Transactions on Information Theory* (1995-1998).
- Steering Committee member of Fourth Workshop on Network Coding, Theory, and Applications (2007).
- Co-organizer of: Third Workshop on Network Coding, Theory, and Applications, San Diego (2007).
- Co-organizer of NSF Workshop on Joint Source-Channel Coding, San Diego, Calif. (1999)
- Co-organizer of IEEE Information Theory Workshop, San Diego, Calif. (1998)
- Co-organizer of Allerton Conference on Communication, Control, and Computing (1995)
- Co-organizer of IEEE Communication Theory Workshop, Ojai, Calif. (1990)
- Program Committee member of Workshop on Network Coding (NetCod) (Hong Kong, 2007)
- Program Committee member of Workshop on Network Coding (NetCod) (Boston, 2006)
- Program Committee member of Int. Symp. on Infor. Theory (ISIT) (Toronto, Canada 2008)
- Program Committee member of Int. Symp. on Infor. Theory (ISIT) (Adelaide, Australia 2005)
- Program Committee member of Int. Conf. on Image Processing (ICIP) (Atlanta, Georgia, September 2006).
- Program Committee member of Int. Conf. on Image Processing (ICIP) (Genova, Italy, 2005)
- Program Committee member of Int. Conf. on Image Processing (ICIP) (Singapore 2004)
- Program Committee member of Int. Conf. on Image Processing (ICIP) (Barcelona, Spain, 2003)
- Program Committee member of Int. Symp. on Infor. Theory and its Applic. (Soeul, Korea 2006)
- Program Committee member of Int. Symp. on Infor. Theory and its Applic. (Xian, China, 2002)
- Program Committee member of Int. Symp. on Infor. Theory and its Applic. (Hawaii, 2000)
- Program Committee member of Data Compression Conf. (Salt Lake City, Utah, 1996-2007)
- Plenary speaker at Nottingham Trent Univ. Workshop on Prob., Theory, & Appl. (England, 1998)
- Plenary speaker at IEEE Communication Theory Workshop (Destin, Florida, 1996)
- IEEE Communication Theory Technical Committee
- IEEE Signal Processing and Communications Electronics Technical Committee
- Started U.S.-Hungary Research Exchange Program
- MIT Educational Council (1985-present)

Teaching Experience (g = grad, u = undergrad)

Calculus (u)

Probability (u)

September 1, 2009

Signals and Systems (u)

Information Theory (g)

Source Coding (g)

Random Processes (g)

September 1, 2009

Publications of Kenneth Zeger

Journal Papers:

1. **Kenneth Zeger and Allen Gersho**, "Zero-Redundancy Channel Coding in Vector Quantisation", *IEE Electronics Letters*, vol. 23, no. 12, pp. 654-656, June 1987.
2. **Kenneth Zeger and Allen Gersho**, "A Stochastic Relaxation Algorithm for Improved Vector Quantiser Design", *IEE Electronics Letters*, vol. 25, no. 14, pp. 896-898, July 1989.
3. **Kenneth Zeger and Allen Gersho**, "Pseudo-Gray Coding", *IEEE Transactions on Communications*, vol. 38, no. 12, pp. 2147-2158, December 1990.
4. **Hai-Ning Liu, Celia Wrathall, and Kenneth Zeger**, "Efficient Solution of some Problems in a Free Partially Commutative Monoid", *Information and Computation*, vol. 89, no. 2, pp. 180-198, December 1990.
5. **Kenneth Zeger**, "Corrections to 'Gradient Algorithms for Designing Predictive Vector Quantizers' ", *IEEE Transactions on Signal Processing*, vol. 39, no. 3, pp. 764-765, March 1991.
6. **Kenneth Zeger, Jacques Vaisey, and Allen Gersho**, "Globally Optimal Vector Quantizer Design by Stochastic Relaxation", *IEEE Transactions on Signal Processing*, vol. 40, no. 2, pp. 310-322, February 1992.
7. **Eyal Yair, Kenneth Zeger, and Allen Gersho**, "Competitive Learning and Soft Competition for Vector Quantizer Design", *IEEE Transactions on Signal Processing*, vol. 40, no. 2, pp. 294-309, February 1992.
8. **Kris Popat and Kenneth Zeger**, "Robust Quantization of Memoryless Sources using Dispersive FIR Filters", *IEEE Transactions on Communications*, vol. 40, no. 11, pp. 1670-1674, November 1992.
9. **Kenneth Zeger and Miriam R. Kantorovitz**, "Average Number of Facets per Cell in Tree-Structured Vector Quantizer Partitions", *IEEE Transactions on Information Theory*, vol. 39, no. 3, pp. 1053-1055, May 1993.
10. **Tamás Linder, Christian Schlegel, and Kenneth Zeger**, "Corrected Proof of de Buda's Theorem", *IEEE Transactions on Information Theory*, vol. 39, no. 5, pp. 1735-1737, September 1993.
11. **Kenneth Zeger, Anurag Bist, and Tamás Linder**, "Universal Source Coding with Codebook Transmission", *IEEE Transactions on Communications*, vol. 42, no. 2, pp. 336-346, February 1994.
12. **Tamás Linder and Kenneth Zeger**, "Asymptotic Entropy Constrained Performance of Tessellating and Universal Randomized Lattice Quantization", *IEEE Transactions on Information Theory*, vol. 40, no. 2, pp. 575-579, March 1994.

September 1, 2009

13. **Tamás Linder, Gábor Lugosi, and Kenneth Zeger**, "Recent Trends in Lossy Source Coding", *Journal on Communications (Hungary)*, vol. XLV, pp. 16-22, March 1994.
14. **Kenneth Zeger and Allen Gersho**, "Number of Nearest Neighbors in a Euclidean Code", *IEEE Transactions on Information Theory*, vol. 40, no. 5, pp. 1647-1649, September 1994.
15. **Kenneth Zeger and Vic Manzella**, "Asymptotic Bounds on Optimal Noisy Channel Quantization Via Random Coding", *IEEE Transactions on Information Theory*, vol. 40, no. 6, pp. 1926-1938, November 1994.
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78. **Zsolt Kukorelly and Kenneth Zeger**, "The Capacity of Some Hexagonal (d, k) Constraints", *IEEE International Symposium on Information Theory (ISIT)*, Washington, D.C., p. 64, June 2001
79. **Thomas Stockhammer and Kenneth Zeger**, "Distortion Bounds and Channel Code Rates for Progressive Quantization", *IEEE International Symposium on Information Theory (ISIT)*, Washington, D.C., p. 263, June 2001
80. **Benjamin Farber and Kenneth Zeger**, "Quantizers with Uniform Encoders and Channel Optimized Decoders" *Data Compression Conference (DCC)*, Salt Lake City, Utah, pp. 292-301, March 2002.

September 1, 2009

81. **Zsolt Kukorelly and Kenneth Zeger**, "New Binary Fix-Free Codes with Kraft Sum $3/4$ ", *IEEE International Symposium on Information Theory (ISIT)*, Lausanne, Switzerland, p. 178, June 2002.
82. **Tamás Frajka and Kenneth Zeger**, "Residual Image Coding for Stereo Image Compression", *International Conference on Image Processing (ICIP)*, Rochester, New York, vol. 2, pp. 217-220, October 2002.
83. **Kenneth Zeger**, "Suboptimality of the Karhunen-Loève Transform for Fixed-Rate Transform Coding", *IEEE Global Telecommunications Conference (GLOBECOM)*, Taipei, Taiwan, vol. 2, pp. 1224-1228, November 2002.
84. **Michelle Effros, Hanying Feng, and Kenneth Zeger**, "Suboptimality of the Karhunen-Loève Transform for Transform Coding", *Data Compression Conference (DCC)*, Salt Lake City, Utah, pp. 293-302, March 2003.
85. **Benjamin Farber and Kenneth Zeger**, "Optimality of the Natural Binary Code for Quantizers with Channel Optimized Decoders", *IEEE International Symposium on Information Theory (ISIT)*, Yokohama, Japan, p. 483, June 2003.
86. **Zsigmond Nagy and Kenneth Zeger**, "Asymptotic Capacity of Two-Dimensional Channels with Checkerboard Constraints", *IEEE International Symposium on Information Theory (ISIT)*, Yokohama, Japan, p. 74, June 2003.
87. **Christopher Freiling, Douglas Jungreis, François Théberge, and Kenneth Zeger**, "Self-Synchronization of Huffman Codes", *IEEE International Symposium on Information Theory (ISIT)*, Yokohama, Japan, p. 49, June 2003.
88. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Linearity and Solvability in Multicast Networks", *38th Annual Conference on Information Sciences and Systems (CISS)*, Princeton University, New Jersey (invited), pp. 1-4, March 2004.
89. **Zsigmond Nagy and Kenneth Zeger**, "Capacity Bounds for the Hard-Triangle Model", *IEEE International Symposium on Information Theory (ISIT)*, Chicago, Illinois, p. 162, June 2004.
90. **Benjamin Farber and Kenneth Zeger**, "Cell Density Functions and Effective Channel Code Rates for Quantizers with Uniform Decoders and Channel Optimized Encoders", *IEEE International Symposium on Information Theory (ISIT)*, Chicago, Illinois, p. 429, June 2004.
91. **Jillian Cannons, Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Network Routing Capacity", *Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) Working Group on Network Coding*, Rutgers University, Piscataway, New Jersey (invited), January 2005.
92. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Insufficiency of Linear Network Codes", *Center for Discrete Mathematics and Theoretical Computer Science (DIMACS) Working Group on Network Coding*, Rutgers University, Piscataway, New Jersey (invited), January 2005.

September 1, 2009

93. **Benjamin Farber and Kenneth Zeger**, "Quantization of Multiple Sources Using Integer Bit Allocation", *Data Compression Conference (DCC)*, Salt Lake City, Utah, pp. 368-377, March 2005.
94. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Unachievability of Network Coding Capacity", *First Workshop on Network Coding, Theory, and Applications (NETCOD)*, Riva del Garda, Italy (invited), April 2005.
95. **Jillian Cannons, Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Network Routing Capacity", *IEEE International Symposium on Information Theory (ISIT)*, Adelaide, Australia, pp. 11-13, September 2005.
96. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Insufficiency of Linear Network Codes", *IEEE International Symposium on Information Theory (ISIT)*, Adelaide, Australia, pp. 264-267, September 2005.
97. **Randall Dougherty and Kenneth Zeger**, "Nonreversibility of Multiple Unicast Networks", *Allerton Conference on Communication, Control, and Computing*, Allerton Park, Illinois (invited), September 2005.
98. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "The Vámos Network", *Second Workshop on Network Coding, Theory, and Applications (NETCOD)*, Boston, Massachusetts, April 2006.
99. **Rathinakumar Appuswamy, Massimo Franceschetti, and Kenneth Zeger**, "Sufficiency of Linear Codes for Broadcast-Mode Multicast Networks", *IEEE International Symposium on Information Theory (ISIT)*, Seattle, Washington, July 2006.
100. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Six New Non-Shannon Information Inequalities", *IEEE International Symposium on Information Theory (ISIT)*, Seattle, Washington, July 2006.
101. **Zsolt Kulkorelly and Kenneth Zeger**, "Automated Theorem Proving for Hexagonal Run Length Constrained Capacity Computation", *IEEE International Symposium on Information Theory (ISIT)*, Seattle, Washington, July 2006.
102. **Jillian Cannons and Kenneth Zeger**, "Network Coding Capacity with a Limited Number of Coding Nodes", *Allerton Conference on Communication, Control, and Computing*, Allerton Park, Illinois (invited), September 2006.
103. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Matroidal Networks", *Allerton Conference on Communication, Control, and Computing*, Allerton Park, Illinois (invited), September 2007.
104. **Randall Dougherty, Christopher Freiling, and Kenneth Zeger**, "Linear Network Codes and Systems of Polynomial Equations", *IEEE International Symposium on Information Theory (ISIT)*, Toronto, Canada, July 2008.

September 1, 2009

105. **Rathinakumar Appuswamy, Massimo Franceschetti, Nikhil Karamchandani, and Kenneth Zeger** "Network Coding for Computing", *Allerton Conference on Communication, Control, and Computing*, Allerton Park, Illinois (invited), September 2008.
106. **Jillian Cannons, Laurence Milstein, and Kenneth Zeger**, "Wireless Relay Placement", *IEEE Radio and Wireless Symposium (RWS)*, San Diego, California (invited), January 2009.
107. **Rathinakumar Appuswamy, Massimo Franceschetti, Nikhil Karamchandani, and Kenneth Zeger** "Network Computing Capacity for the Reverse Butterfly Network", *IEEE International Symposium on Information Theory (ISIT)*, Seoul, Korea, June 2009.

EXHIBIT 36

--- July 2008 Invoice from Dr. Ken Zeger ---

For: Melissa Bailly
Quinn Emanuel Urquhart Oliver & Hedges, LLP Work Description: Consulting
expert for patent infringement litigation
Case: Eon-Net, L.P. v. Flagstar Bancorp
C 05-2129 RSM
Patents: US 6683697, 7184162, 7075673
Date of Invoice: July 31, 2008
Invoice Number: ZEGE073108

Work summary: Document inspections, phone conferences.

Expense report summary:

\$16,775.00 K. Zeger for 30.5 hours at \$550/hr
\$0.00 Misc. Expenses

\$16,775.00 Balance Due

Please send a check for the Balance Due to:

Dr. Ken Zeger

Cell Phone: { 214-491-1100
FAX: 214-491-1100

Daily Work Log:

Date	Hours
07-01-08	
07-02-08	
07-03-08	
07-04-08	
07-05-08	
07-06-08	
07-07-08	
07-08-08	

07-09-08	
07-10-08	
07-11-08	
07-12-08	
07-13-08	
07-14-08	
07-15-08	
07-16-08	4.0
07-17-08	6.0
07-18-08	2.0
07-19-08	4.0
07-20-08	5.0
07-21-08	
07-22-08	2.0
07-23-08	3.5
07-24-08	3.5
07-25-08	
07-26-08	
07-27-08	
07-28-08	
07-29-08	
07-30-08	0.5
07-31-08	

Totals: 30.5

EXHIBIT 37

--- August 2008 Invoice from Dr. Ken Zeger ---

For: Melissa Baily
 Quinn Emanuel Urquhart Oliver & Hedges, LLP Work Description: Consulting
 expert for patent infringement litigation
 Case: Eon-Net, L.P. v. Flagstar Bancorp
 C 05-2129 RSM
 Patents: US 6683697, 7184162, 7075673
 Date of Invoice: August 31, 2008
 Invoice Number: ZEGE083108
 Work summary: Report preparation, phone conferences,
 meeting with attorney Melissa Baily in San Diego on 08-06-08.
 Expense report summary:

\$20,900.00 K. Zeger for 38.0 hours at \$550/hr

Travel Expenses

\$150.00 Misc. Expenses

 \$21,050.00 Balance Due

Please send a check for the Balance Due to:

 Dr. Ken Zeger

Cell Phone:

FAX:

----- Misc. Expenses

08-07-08 \$150.00 WordPerfect document production (D3 Distributing) Daily Work Log:

Date Hours

 08-01-08

08-02-08

08-03-08

08-04-08

08-05-08

08-06-08 8.5

08-07-08 8.0

08-08-08 9.0

08-10-08 7.0

08-11-08 5.5

08-12-08

08-13-08

08-14-08

08-15-08

08-16-08

08-17-08

08-18-08

08-19-08

08-20-08

08-21-08

08-22-08

08-23-08
08-24-08
08-25-08
08-26-08
08-27-08
08-28-08
08-29-08
08-30-08
08-31-08

Totals: 38.0

EXHIBIT 38

--- September 2008 Invoice from Dr. Ken Zeger ---

For: Melissa Baily
Quinn Emanuel Urquhart Oliver & Hedges, LLP
Work Description: Consulting expert for patent infringement litigation
Case: Eon-Net, L.P. v. Flagstar Bancorp
C 05-2129 RSM
Patents: US 6683697, 7184162, 7075673
Date of Invoice: September 30, 2008
Invoice Number: ZEGER093008

Work summary: Document inspection, report preparation, phone conferences,

Expense report summary:

\$19,800.00 K. Zeger for 36.0 hours at \$550/hr

\$0.00 Misc. Expenses

\$19,800.00 Balance Due

Please send a check for the Balance Due to:

Dr. Ken Zeger

Cell Phone:

FAX:

Daily Work Log:

Date	Hours
09-01-08	3.5
09-02-08	0.5
09-03-08	
09-04-08	
09-05-08	
09-06-08	
09-07-08	
09-08-08	
09-10-08	
09-11-08	1.5
09-12-08	
09-13-08	
09-14-08	8.5
09-15-08	9.5
09-16-08	3.5
09-17-08	8.0
09-18-08	1.0
09-19-08	
09-20-08	
09-21-08	

09-22-08
09-23-08
09-24-08
09-25-08
09-26-08
09-27-08
09-28-08
09-29-08
09-30-08

Totals: 36.0

EXHIBIT 39

--- November 2008 Invoice from Dr. Ken Zeger ---

For: Melissa Bailly
 Quinn Emanuel Urquhart Oliver & Hedges, LLP
 Work Description: Consulting expert for patent infringement litigation
 Case: Eon-Net, L.P. v. Flagstar Bancorp
 C 05-2129 RSM
 Patents: US 6683697, 7184162, 7075673
 Date of Invoice: November 2, 2008
 Invoice Number: ZEGE110208

Work summary: Document inspection, phone conference, attend Markman hearing.

Expense report summary:

\$11,275.00 K. Zeger for 20.5 hours at \$550/hr
 \$1,246.14 Misc. Expenses

 \$12,521.14 Balance Due

Please send a check for the Balance Due to:

 Dr. Ken Zeger

Cell Phone:
 FAX:

Daily Work Log:

Date	Hours
10-01-08	
10-02-08	
10-03-08	
10-04-08	
10-05-08	
10-06-08	0.5
10-07-08	
10-08-08	
10-10-08	
10-11-08	
10-12-08	
10-13-08	
10-14-08	
10-15-08	
10-16-08	
10-17-08	
10-18-08	
10-19-08	
10-20-08	
10-21-08	

10-22-08
10-23-08
10-24-08
10-25-08 1.5
10-26-08 6.0
10-27-08 12.5
10-28-08
10-29-08
10-30-08
10-31-08

Total: 20.5

Misc. Expenses:

\$819.00 Round-trip air tickets from San Diego to Seattle for Markman hearing (Oct
\$41.00 taxi to San Diego airport (10-26-08)
\$42.00 taxi from San Diego airport (10-27-08)
\$45.00 taxi from Seattle airport (10-26-08)
\$299.14 hotel in Seattle - 1 night (10-27-08)

\$1246.14 total misc.